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Relation of Seasonality of Production of Processed Foods to Deliveries of Sugar to Manufacturers of These Foods

It is possible to make rough evaluations of the influence of seasonality of production for various processed foods on deliveries of sugar by primary distributors to processors of these foods by comparing data assembled by the Sugar Branch from 1949 to 1952 on quarterly deliveries of sugar and quarterly production of processed foods for the same years. There are certain differences between the foods included in a particular group category used by the Sugar Branch in collecting sugar delivery information and by the agency or organization reporting production or reporting data from which approximate production can be calculated for the same general food group. However, these differences are minor for the most part. They will be noted in the sections of this report devoted to the various food groups.

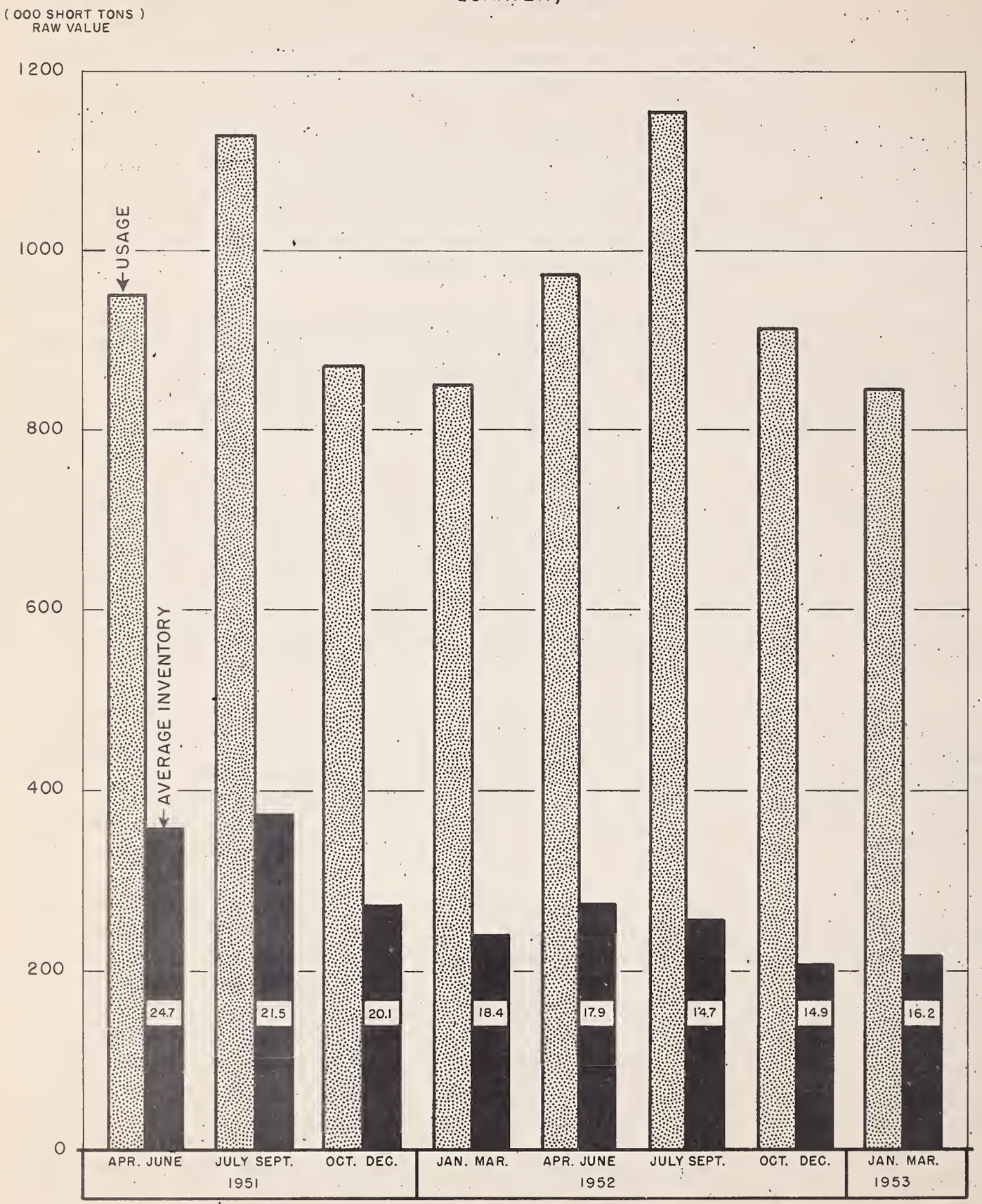
Data on production are available on a monthly as well as quarterly basis. Indexes were derived for monthly production to show the detail on seasonality not indicated by quarterly data. However, since delivery information is available on a quarterly basis only, quarterly production was used in relating seasonality of food production to sugar deliveries to food processors.

Information on production and information permitting the calculation of approximate production was obtained from 4 sources. The American Bottlers of Carbonated Beverages furnished quantitative data on soft drink production; the Bureau of Agricultural Economics supplied data on the production of dairy products; the Bureau of Labor Statistics reported information from which production man hours for processed fruits and vegetables, confectionery and related products and bakery products could be derived, and the American Bakers Association furnished indexes of the output of bread and cake.

In the course of bringing together information on production, the persons contacted, especially representatives of the various food trade associations, generally expressed the opinion that they would expect this analysis to show a very close correlation between production of the finished foods and deliveries of sugar to the processors of those foods. Further, most persons believed that this relationship would remain close in the future.

The reason offered in support of these opinions was that users are presently following a policy of maintaining operating stocks at minimum levels and plan to adhere to this policy. This would seem to be borne out by the data in chart 1 which shows average sugar inventories (beginning and ending inventory divided by 2) compared to usage by quarters during the period April 1951 to April 1953 and the number of days of operating requirements represented by average inventories, and; chart 2 which shows sugar stocks at the beginning of each quarter over the same period. These charts show the heavy accumulations which occurred during the second quarter of 1951 - the last sugar scare buying period since the outbreak of hostilities in Korea in June 1950 - and the steady reduction in inventories since that time. The number of days of operating requirements in inventory in terms of working days based on a 5 day-40 hour week ranged from a high of 24.7 during the second quarter of 1951 to a low of 14.7 the third quarter of 1952. During the most recent quarter for which data are available-the first quarter of 1953 - there were, on the average, 16.2 days of operating requirements for sugar in inventory.

Chart I. INDUSTRIAL USERS: COMPARISON OF SUGAR USAGE, AVERAGE SUGARS INVENTORIES AND NUMBER OF DAYS OPERATING REQUIREMENTS FOR SUGAR REPRESENTED BY AVERAGE SUGAR INVENTORIES, BY QUARTERS, SECOND QUARTER 1951 TO FIRST QUARTER, 1953.



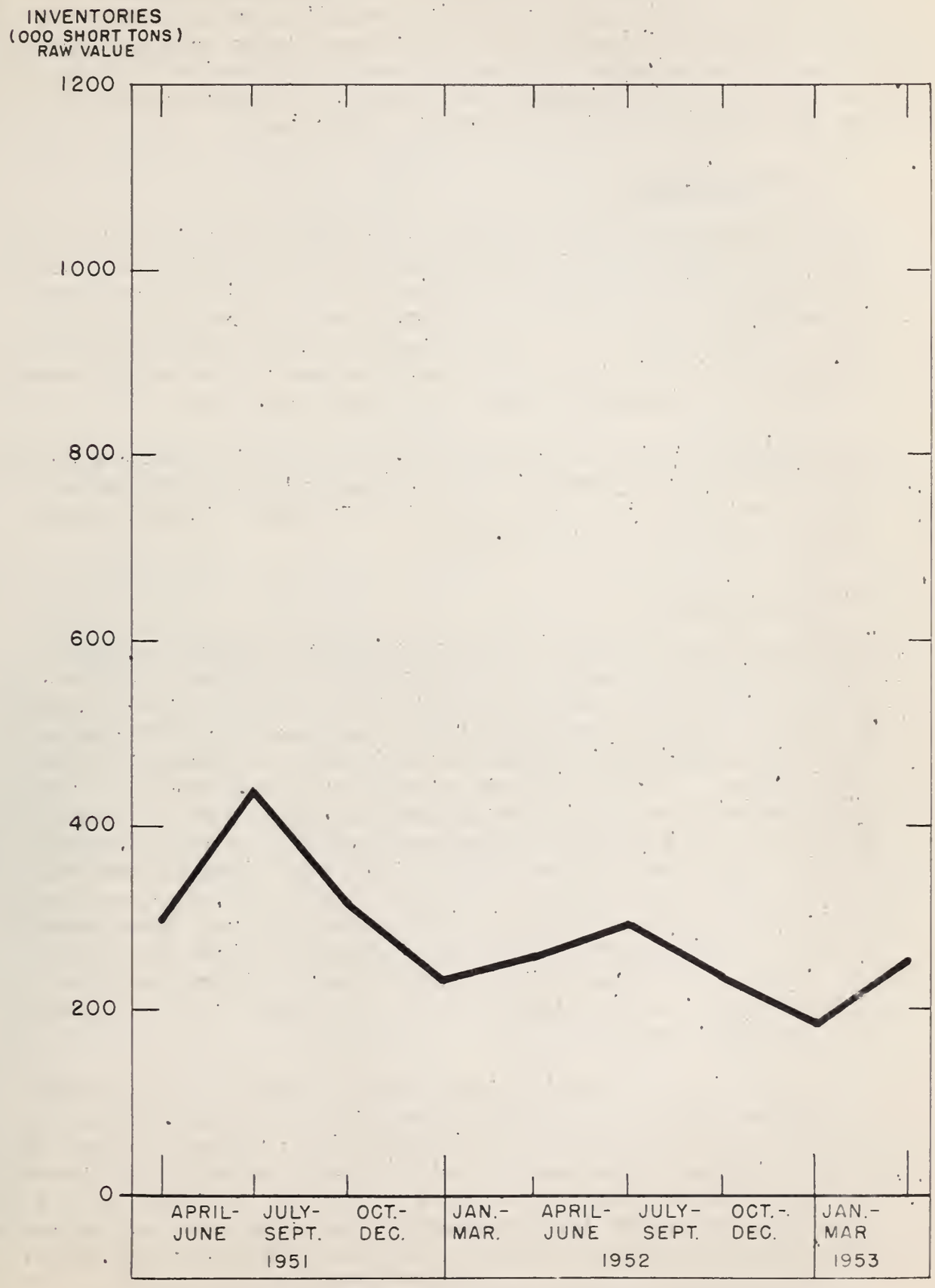
Legend: → Usage during quarter

00.0 → Average of beginning and ending inventory

Number of working days supply as derived from the proportion average inventory comprized of usage, on the basis of a 5 day–40 hour week

Source: Sugar Branch, P.M.A.

Chart 2. INDUSTRIAL USERS: SUGAR INVENTORIES HELD AT THE BEGINNING OF EACH QUARTER, APRIL 1951 TO APRIL 1953 1/



1/ DATA SHOWN FOR BEGINNING STOCKS FOR SECOND QUARTER 1953 IS ENDING STOCKS FOR FIRST QUARTER 1953.

Source: Sugar Branch, P.M.A.

There are no comparable data covering industrial users stock holdings in the years preceding 1951. Thus it is not certain that users are carrying lower stocks than they did in the more normal years before World War II and between World War II and the Korean emergency. But from charts 1 and 2 it can be concluded that users stocks are well below the 1951 peak and that they have been held at levels covering only about three weeks requirements for almost three quarters of a year. This would seem to reflect a "minimum stock" policy. Two principal factors were listed by the persons interviewed as causing the adoption of such a policy. These were:

1. Price stability

Sugar prices have been so stable in recent years that there is no point in speculating in sugar or in stocking up when the price is believed to be at a low point. Even if the market is analyzed correctly and prices are due for an increase, the increases are seldom sufficient to pay storage costs on sugar purchased in advance. And there are enough wrong guesses as to market movement to further reduce profits made by correct guesses.

The persons interviewed hastened to add, however, that sugar users would still be sensitive to war scares, inflated world market prices, or other happenings which sugar users fear will cause unusual shortages or high prices.

2. Liquid sugar

The trend toward the use of liquid sugar is strongly upward. In 1949 industrial users purchased about 12 percent of their sugar in liquid form. By the end of 1952 this percentage had increased to 21. The adoption of liquid sugar has been most striking among beverage manufacturers, fruit and vegetable processors and ice cream makers. In 1952, liquid sugar constituted 30.2 percent of the sugar delivered to beverage manufacturers. Fruit and vegetable processors and ice cream makers received 29.2 percent and 27.2 percent of their sugar respectively in liquid form. Confectioners and bakers are also using more liquid sugar but these industries, especially the bakers, have not shifted to liquid sugar to as great an extent as the bottling, fruit and vegetable processing and ice cream industries. In 1952, 16.7 percent of the sugar delivered to confectioners and 4.2 percent of the sugar delivered to bakers was in liquid form.

The use of sugar in liquid form greatly limits the possibility of advance purchases and stocking on the part of the user. Storage tanks are expensive and liquid sugar is more perishable than dry sugar. Users are forced to obtain delivery when needed for immediate production purposes. Sometimes delivery is on a daily basis - seldom less often than 2 or 3 times a week in the peak use season. Purchases are made mostly at the going spot price.

A third factor which probably influences stocking practices of sugar using industries is the seasonality of production of the finished products. Further, one would expect the influence of this factor to vary among industries in accordance with the relative degree of seasonality of production of the various products. Industries in which production is quite seasonal and which, consequently, require sugar in large quantities for a short period, are probably less likely to accumulate stocks or speculate in seasons of low production. The cost of carrying stocks of any ingredient or material, especially those with stable prices, rules out the probability of substantial off season procurement. But industries with relatively little seasonality of production have a better chance of gaining by playing the market. Heavy stocks can be reduced more rapidly and systematically where there is a continuing need for sugar in production. In addition, these industries usually have a staff devoting full time to ingredient procurement, thereby placing them in a better position to know when to buy and when not to buy. Even with these industries, however, the possibility of gain by forward procurement is limited by the price stability of the product concerned and the costs associated with carrying stocks.

Table 1 shows monthly indexes of production of the various sugar using industries. The monthly average production for 1949 was used as 100 in preparing these indexes, except for fruits and vegetables. For fruits and vegetables, the 1951 average was used as 100 because no data are available for this industry prior to 1951.

At opposite extremes from the point of degree of seasonality in production are the processed fruit and vegetable and the bakery industries. Fruit and vegetable processors have a very short peak production period corresponding with the harvest season which reaches the top in September and then have an 8 month season of low production extending from November through June. Production per month in the peak period was more than three times as large as in the period of low production. Production in the bakery industry, on the other hand, fluctuates very little. In October, the high month most years, the index of production was only about 108 percent of January, the usual low month. The production of sweetened condensed milk and frozen dairy products is almost as seasonal as the production of fruits and vegetables but production is relatively high for a longer period. For sweetened condensed milk, the peak month is May which averaged 272 percent of December, the low month. In the case of frozen dairy products the high month, July was about 235 percent of the low months of December, January and February. Bottled soft drink production is highest in June, July and August with July the peak month. July production averaged about 185 percent of the low months of January and February. In these industries, seasonality of production is the more responsive to consumption factors than to raw material availability, as is the case with fruits and vegetables. Fluctuations in production are moderate in the confectionery industry, though more pronounced than in the bakery industry. Confectionery production, attuned to the increased consumption pattern during the holiday and winter season, begins to pick up in August and holds at the highest levels from September through December, tailing off somewhat in January and February. Production is lowest from April to July. Production in October, the highest month, was 141 percent of the low month, July, during the 1949-52 period. Other factors which may possibly influence stock accumulation practices are the average size of enterprise within an industry, the relative ability of each type of processor to obtain financing, the availability of storage, and the proximity to beet processors, cane refiners and other supply centers. These are debatable points, however, and ones on which there are no factual data except with

Table 1. Indexes of Monthly Production of Principal Sugar Containing Products 1949 to 1952, 1949 1/ Average = 100

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Year
Sweetened cond. milk 2/													
1949	79	81	101	124	171	143	114	108	87	70	64	58	100
1950	61	65	83	94	118	116	104	104	86	76	57	66	86
1951	75	67	81	89	148	144	98	85	65	61	52	66	86
1952	66	69	82	85	136	106	80	82	59	46	41	49	75
Frozen dairy products 2/													
1949	60	66	87	99	126	148	152	146	102	83	71	61	100
1950	66	70	84	94	127	146	146	144	107	93	76	63	101
1951	71	69	91	99	135	145	158	155	112	99	74	67	106
1952	Not Available												
Bottled soft drinks 3/													
1949	73	73	88	92	114	133	138	137	100	90	80	82	100
1950	76	74	89	90	114	127	121	131	104	100	81	82	99
1951	80	74	89	93	118	129	137	139	108	104	83	84	103
1952	87	85	90	105	122	149	160	138	121	106	86	95	112
Bakery products 4/													
1949	96	98	95	97	99	101	101	102	105	105	103	100	100
1950	97	99	100	100	102	102	103	102	102	104	102	101	101
1951	98	99	99	99	100	102	102	103	103	103	101	102	101
1952	98	99	99	98	97	102	105	104	104	104	104	102	101
Processed fruits and vegetables 4/													
1949	Not Available												
1950	Not Available												
1951	66	63	62	65	70	77	131	187	209	142	68	60	100
1952	56	56	55	61	63	77	126	166	199	125	72	62	93
Confectionery and related products 4/													
1949	104	98	95	89	85	84	82	95	116	127	116	110	100
1950	108	102	98	90	90	93	90	110	122	126	120	115	105
1951	108	105	101	93	92	93	87	98	111	116	115	114	103
1952	107	104	99	92	91	95	87	99	113	117	117	115	103

1/ For processed fruits and vegetables, 1951 average = 100. 2/ Derived from data on physical quantity produced supplied by Bureau of Agricultural Economics. 3/ Derived from data on physical quantity produced supplied by American Bottlers of Carbonated Beverages. 4/ Derived from data supplied by the Bureau of Labor Statistics on number of production workers and average number of hours worked by production workers.

respect to average size of enterprise. The 1947 Census of Manufacturers lists the average size of enterprise from the point of value of products shipped. During 1947, the average soft drink bottler, fruit and vegetable processor, baker, and confectioner shipped products valued at $153,173.00, $723,000.00, $415,150.00, and $832,416.00 respectively. There are no data on the average value of products shipped by processors of all frozen dairy products and sweetened condensed milk. However, in 1947 the average ice cream processor shipped products valued at $ 402,203.00 and the average milk condenser and evaporator shipped products valued at $ 1,723,380.00.

While the possible influence of these factors must be recognized, it appears that relative price stability, degree of production seasonality, and the extent of liquid sugar usage are by far the principal considerations governing the sugar procurement and inventory policies of industrial users. War scares and other unsettling market elements, of course, dampen the influence of these factors. The following sections examine for each principal sugar using industry the relationship between level of production of the finished product and deliveries of sugar to the processors in each industry from 1949 to 1952. The charts covering the various industries are constructed with identical scales for deliveries in order that the degree of seasonality in quarterly production and deliveries as well as the relationship between these factors can be reviewed. In addition, the relative quantity of sugar delivered to each type of processor during comparable quarters can be noted.

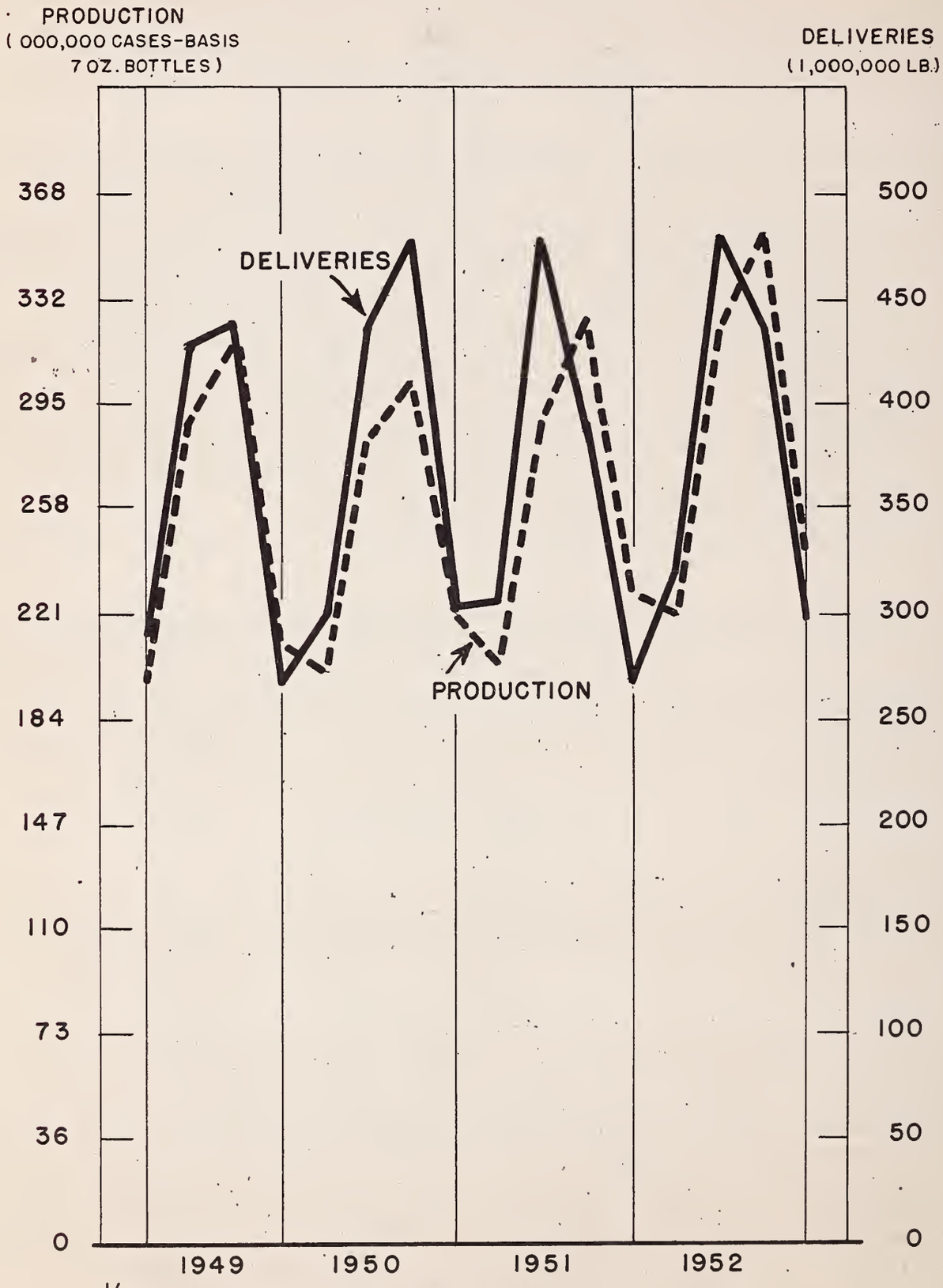
Beverages

Chart 3 compares monthly production of bottled soft drinks with quarterly deliveries of sugar to beverage manufacturers from 1949 to 1952. "Beverages" as defined by the Sugar Branch for purposes of collecting quarterly deliveries include not only bottled soft drinks but alcoholic beverages, drink mixes, fountain sirups and flavoring and coloring extracts. However, bottled soft drinks are by far the dominant volume factor in this group from the point of sugar use and meaningful comparisons between deliveries and production can be made.

There are actually no data on monthly or quarterly production of soft drinks. Soft drink "production" as shown here represents sales. The representative of the American Bottlers of Carbonated Beverages indicated that sales and production occur almost simultaneously because bottlers carry very small finished goods inventories.

Deliveries to soft drink bottlers and soft drink production tended to move together in the "normal" years of 1949 and 1952 with deliveries preceding production by about 3 weeks. The relationship between deliveries and production is not nearly as close in 1950 and 1951 as in 1949 and 1952 due to (1) heavy accumulations during the third quarter of 1950 with the outbreak of hostilities in Korea, (2) continued apparent high inventory policy the 4th quarter of 1950, (3) heavy buying in the second quarter of 1951 brought on by a spiraling world sugar price and fear of an accompanying inflation in domestic prices and (4) apparent reductions in stocks the third and fourth quarters of 1951. (See charts 1 and 2 which show the overall industrial user stock accumulation in the second quarter of 1951 and the subsequent reduction that occurred in the latter half of that year.)

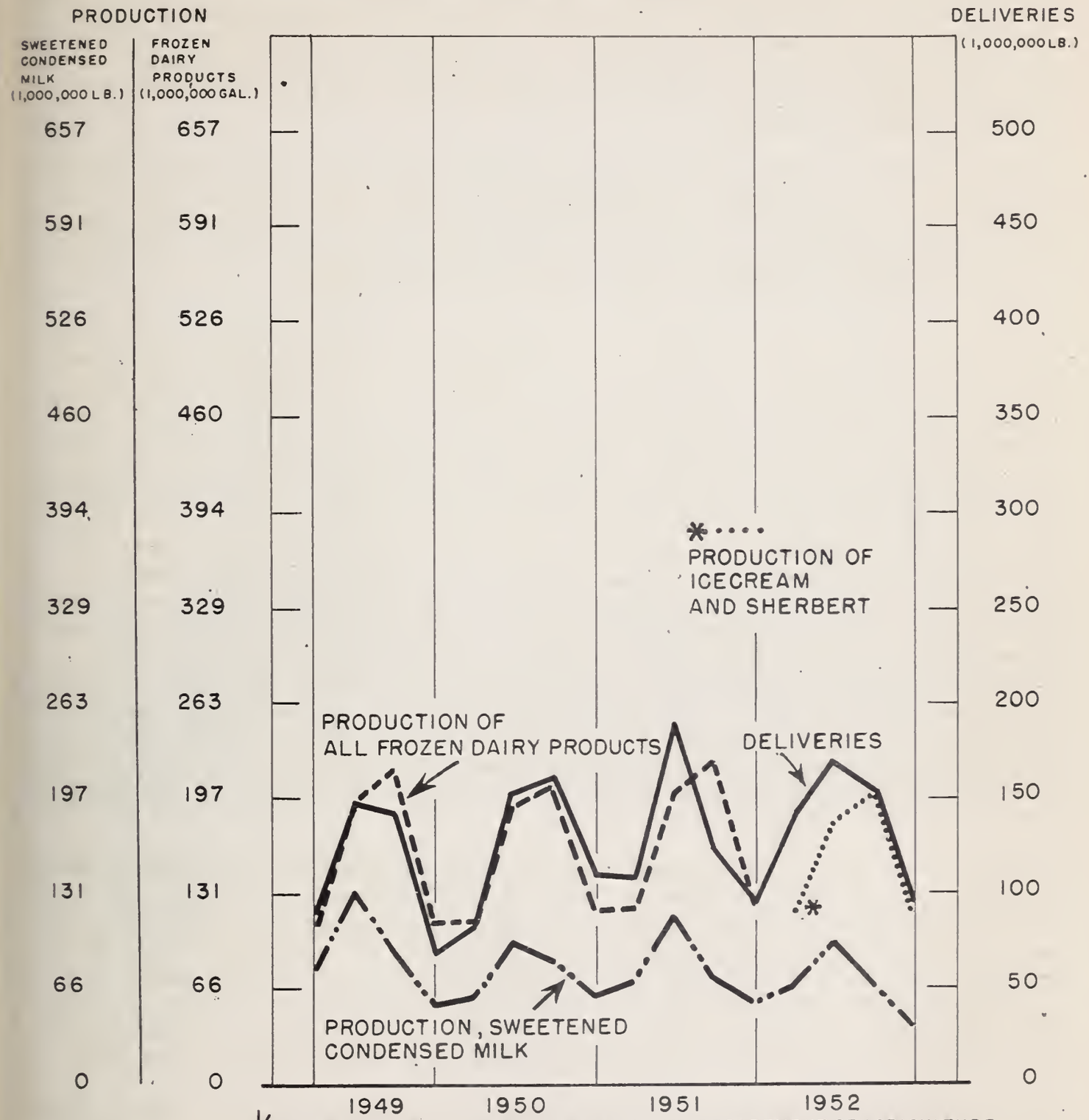
Chart 3. COMPARISON OF QUARTERLY PRODUCTION OF BOTTLED SOFT DRINKS 1/ AND QUARTERLY DELIVERIES OF SUGAR TO BEVERAGE MANUFACTURERS 2/, 1949 TO 1952



1/ DATA FROM AMERICAN BOTTLERS OF CARBONATED BEVERAGES.

2/ SUGAR BRANCH, P.M.A., U.S. DEPARTMENT OF AGRICULTURE. INCLUDES BOTTLED SOFT DRINKS, DRINK MIXES, FOUNTAIN SIRUPS, FLAVORING AND COLORING EXTRACTS, AND ALCOHOLIC BEVERAGES.

Chart 4. COMPARISON OF QUARTERLY PRODUCTION OF FROZEN DAIRY PRODUCTS [1] AND SWEETENED CONDENSED MILK [1] WITH QUARTERLY DELIVERIES OF SUGAR TO MANUFACTURERS OF DAIRY PRODUCTS [2], 1949 TO 1952.



[1] BUREAU OF AGRICULTURAL ECONOMICS, U.S. DEPARTMENT OF AGRICULTURE DATA FOR ALL FROZEN DAIRY PRODUCTS NOT AVAILABLE FOR 1952.

[2] SUGAR BRANCH, P.M.A., U.S. DEPARTMENT OF AGRICULTURE.

Dairy Products

The quarterly production of frozen dairy products and sweetened condensed milk and quarterly deliveries of sugar to dairy product manufacturers are shown on chart 4 for the years 1949 to 1952. Ice cream and sherbet production only are included in the data for frozen dairy products for 1952 since the 1952 production data for other frozen dairy products is not yet available. Ice cream and sherbet comprise almost 90 percent of the output of all frozen dairy products, by weight.

Frozen and dry ice cream mix production is not included. Both items are used primarily in the production of ice cream, and since ice cream is included in frozen dairy products, the ice cream mixes largely show up in that category. The data for deliveries include cheese, butter and chocolate milk, as well as the commodities covered in the production information.

Sweetened condensed milk production is shown separately on chart 4 because, like ice cream mix, considerable quantities are used in ice cream and there would be some duplication in an aggregate dairy product production figure. If data were available to show the quantity of sweetened condensed milk used in ice cream and thus permit the development of an aggregate figure for the production of sugar using dairy products, the relationship between production and sugar delivery trends of dairy products would be more readily discernible. The production of frozen dairy products remains high during the second and third quarters reaching the highest point in the third quarter. Sweetened condensed milk, on the other hand, reaches peak production in the second quarter, partly to be in a position to supply the subsequent peak demand from frozen dairy product manufacturers, and then declines rapidly. This, of course, places opposing influences on the course of sugar deliveries in the third quarter since sugar distributors are supplying an industry in which production is increasing moderately and one in which production is decreasing precipitously. Apparently the reduced demand from condenseries more than outweighs the strengthened demand from frozen dairy product manufacturers. The only year in which deliveries were highest in the third quarter was during the war scare buying period in 1950.

Deliveries to dairy product manufacturers, like deliveries to bottlers, showed approximately the same pattern in 1949 and 1952, following the seasonal production rather closely. In reviewing the 1952 relationship, it should be kept in mind that the frozen dairy production line is relatively lower than usual due to the fact that the data covers ice cream and sherbet only. Deliveries were unusually heavy the third quarter of 1950 and second quarter of 1951. Further, deliveries to dairy product manufacturers were lower than would normally have been expected in the third and fourth quarters of 1951.

The production of sweetened condensed milk has been declining in recent years. According to the International Association of Ice Cream Manufacturers, this decline is due to reduced use of condensed milk by ice cream makers. Ice cream manufacturers are turning to frozen ice cream mix as their basic end product ingredient.

Processed Fruits and Vegetables

Quantitative data on monthly and quarterly production of processed fruits and vegetables (canned fruits and vegetables, fruit and vegetable juices, jams, jellies, preserves, fruit butters, maraschino cherries and canned soups) are not available. However, it is possible to approximate production by developing production man hours from data published by the Bureau of Labor Statistics on indexes of the number of production workers and number of hours worked by production workers. These data can be adjusted each year in line with available data concerning changes in productivity per man hour.

Man hour calculations can only be made for 1951 and 1952 since the data are not available for prior years. The adjustment for efficiency changes is in accordance with the data published by B.L.S. for efficiency changes in the entire canning and preserving industry, of which processed fruits and vegetables constitute about 90 percent.

Chart 5 shows deliveries of sugar to fruit and vegetable processors from 1949 to 1951 and production during 1951 and 1952. The processors for which the production and delivery information is available represent the same segments of the fruit and vegetable processing industries except that the food freezers are included in the delivery data but not in the production data.

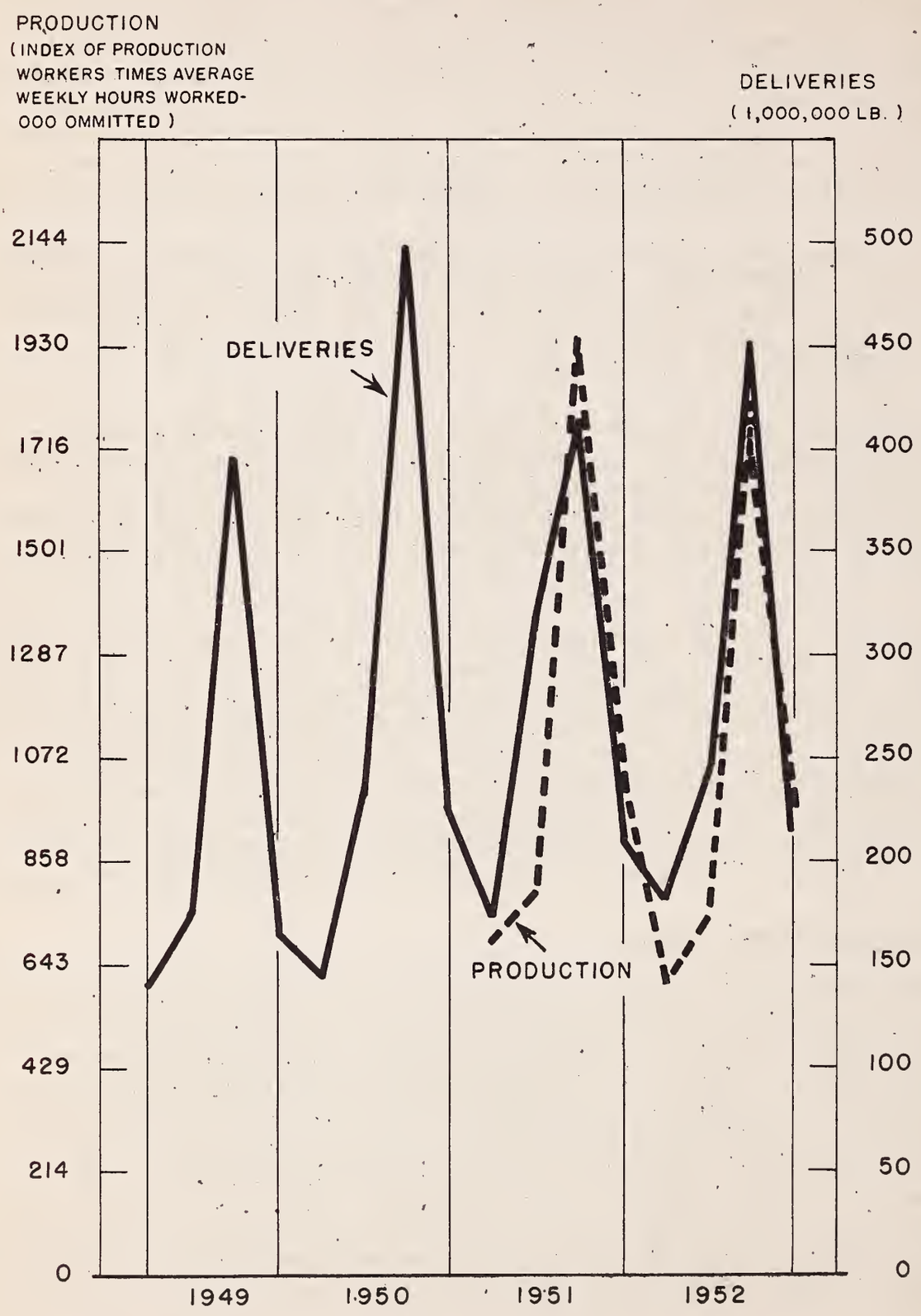
Fruit and vegetable processors responded strongly to the third quarter 1950 war scare buying stimulus. Although production is not shown for that year, the annual pack was not as high as 1951, the record year to date. Fruit and vegetable processors also bought unusually heavily during the second quarter of 1951, though the departure from the normal pattern was not quite as pronounced as with dairy product manufacturers and bottlers. The heavier than usual purchases in the second quarter of 1951 reduced the usual third quarter peak below what would have been expected in that year of record production. In 1952, deliveries and production were very closely related.

Confectionery and Related Products

There are two indicators available on the monthly and quarterly production of confectionery products. Each month the Bureau of the Census reports dollar sales of confectionery products, including competitive consumer type chocolate confections. Other chocolate and cocoa products and chewing gum are not included. In addition, the Bureau of Labor Statistics publishes monthly information on number of production workers and average number of hours worked by production workers in the confectionery industry. From these data production man hours may be calculated. The B.L.S. reports cover candy, all cocoa and chocolate products and chewing gum. Information received by the Sugar Branch on quarterly sugar deliveries to the confectionery industry cover the same products as the B.L.S. reports.

Production man hours, adjusted for changes in producitivity, were selected as being most representative of production in the confectionery industry. The data on sales have three major sources of inaccuracy when employed to show seasonality of production. First confectioners, especially the larger ones, are attempting to smooth production curves by the use of cold storage to permit holding candy produced in the months of low consumption for shipment during the periods of high consumption -such as the holiday seasons in the

Chart 5. COMPARISON OF QUARTERLY PRODUCTION OF PROCESSED FRUITS AND VEGETABLES [1] WITH QUARTERLY DELIVERIES OF SUGAR TO MANUFACTURERS OF PROCESSED FRUITS AND VEGETABLES [2], 1949 TO 1952 [3].

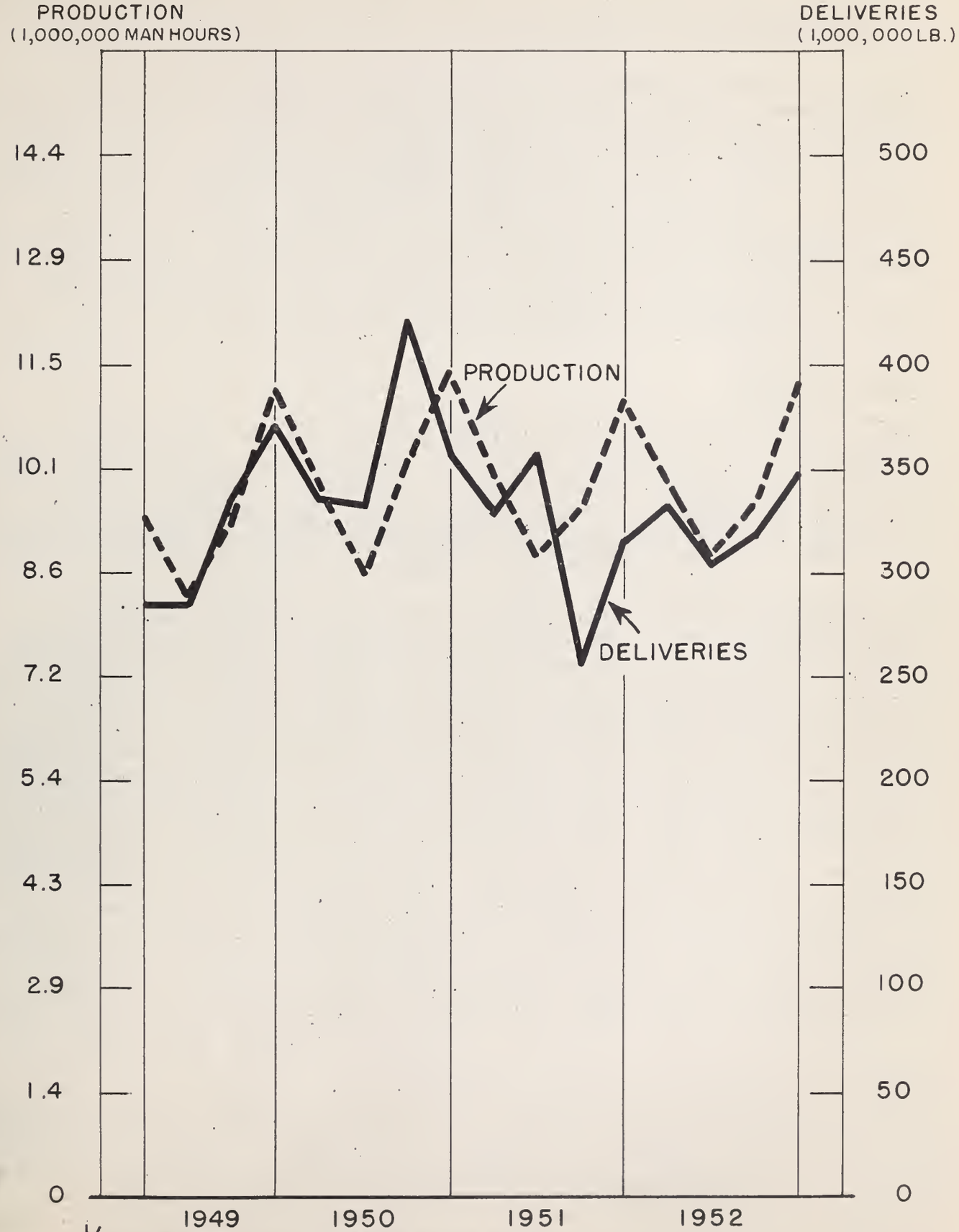


[1] DATA FROM BUREAU OF LABOR STATISTICS. INCLUDES CANNED FRUITS AND VEGETABLES, FRUIT AND VEGETABLE JUICES (INCLUDING SOUPS) AND JAMS, JELLIES, PRESERVES AND FRUIT BUTTER

[2] SUGAR BRANCH, P.M.A., U.S. DEPARTMENT OF AGRICULTURE, INCLUDES FROZEN PRODUCTS AS WELL AS THOSE COVERED BY PRODUCTION DATA.

[3] DATA ON PRODUCTION NOT AVAILABLE PRIOR TO 1951.

Chart 6. COMPARISON OF QUARTERLY PRODUCTION OF CONFECTIONERY AND RELATED PRODUCTS [1], WITH QUARTERLY DELIVERIES OF SUGAR TO MANUFACTURERS OF CONFECTIONERY AND RELATED PRODUCTS [2] 1949 TO 1952.



[1] DATA FROM BUREAU OF LABOR STATISTICS

[2] SUGAR BRANCH, P.M.A., U.S. DEPARTMENT OF AGRICULTURE

cool months. It is impossible to determine how widespread this practice has become but apparently it is sufficiently significant to merit consideration when using sales data in arriving at production patterns. Second, the sales data cover only a portion of the confectionery and related product industry. Third, the sales data represent value rather than physical quantity and do not cover the entire confectionery and related product industry.

Chart 6 compares quarterly production with quarterly deliveries of sugar to confectioners. During 1949, the first half of 1950 and the last three quarters of 1952, there was a fairly close relationship between production and deliveries. But from the third quarter of 1950 to the first quarter of 1952, there was almost no seasonal relationship between deliveries and production. Unusually heavy deliveries the third quarter of 1950 preceded peak production by a full quarter and the 1951 delivery peak occurred the second quarter of the year, when production was at the seasonal low. After the 1951 buying peak, confectioners reduced deliveries below usual seasonal needs. The seasonal relationship was restored in 1952.

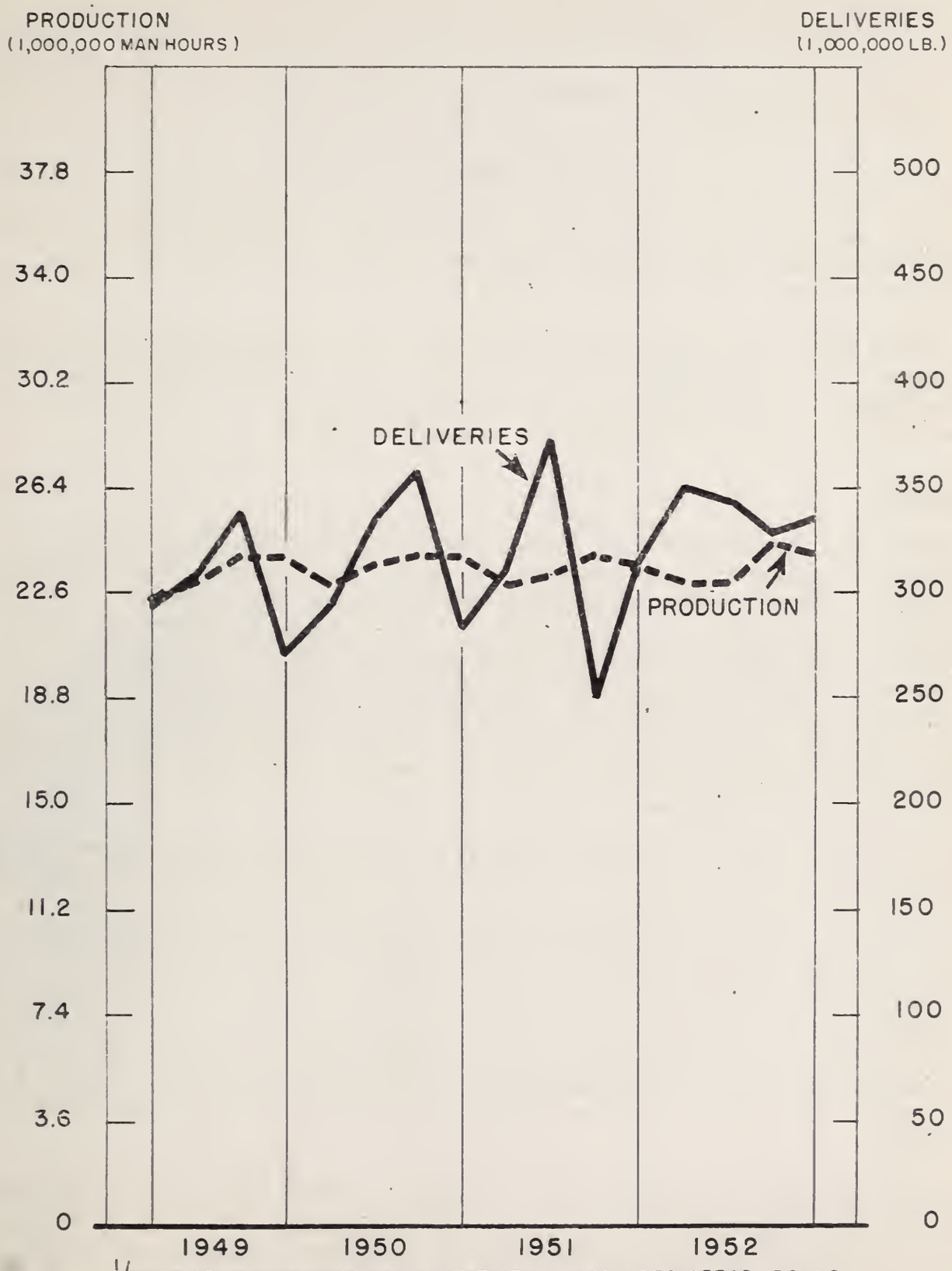
Bakery Products

Chart 7 shows quarterly production of bakery products and quarterly deliveries of sugar to bakery manufacturer. The production and delivery data cover the same products with minor exceptions. Both cover all types of bread, cake, pie, rolls, doughnuts, biscuits, crackers, cookies, pretzels and crullers. The delivery data, however, also cover dessert preparations and prepared cereals while the production data do not.

The production information for bakery products, like production data on confections and fruits and vegetables, represents production man hours. However, there are no data to accurately adjust man hours from year to year in accordance with productivity changes. Annual production figures for bakery products are not available and 1947 is the most recent year for which information is available on the quantity of flour produced for sale to bakers. However, there are estimates available on annual flour production and monthly and quarterly bakery production man hours were adjusted in accordance with changes in annual flour production. This assumes that the ratio of the quantity of flour used for industrial baking to total flour use has remained the same. Representatives of bakery trade associations and persons in the Department of Agriculture responsible for maintaining statistics on the flour and flour using industries indicate that this is probably a reasonable assumption. If there has been an increase in the ratio of commercial use of flour to total use of flour, the production data on Chart 7 are inaccurate to the extent of this trend. This error, however, would affect the general level of the production line rather than the indicated seasonality.

Compared to the other industries covered in this analysis, there is a very slight seasonal production trend in the baking industry. Production begins to climb the 2nd quarter from the 1st quarter low and is highest in the 3rd and 4th quarters. Sugar deliveries generally climbed with production demand the 2nd and 3rd quarters of both 1949 and 1950 but much more steeply. However, the 4th quarter of each of these years showed a substantial decline in sugar deliveries while production was at the seasonal high level. The 1st quarter of 1950 and 1951 saw production at the seasonal low and deliveries climbing. Beginning the 2nd quarter of 1951, there was no

Chart 7. COMPARISON OF QUARTERLY PRODUCTION OF BAKERY PRODUCTS [1] WITH QUARTERLY DELIVERIES OF SUGAR TO MANUFACTURERS OF BAKERY AND ALLIED PRODUCTS [2], 1949 TO 1952.



[1] DATA FROM BUREAU OF LABOR STATISTICS. INCLUDES BREAD, ROLLS, CAKE AND OTHER SWEET GOODS, DOUGHNUTS, CRULLERS, COOKIES, BISCUITS, CRACKERS, PRITZELS.

[2] SUGAR BRANCH, P.M.A., U.S. DEPARTMENT OF AGRICULTURE. INCLUDES DESSERT PREPARATIONS AND PREPARED CEREALS IN ADDITIONS TO THE PRODUCTS COVERED IN THE PRODUCTION DATA.

seasonal correlation between production and deliveries. In fact, deliveries and production moved in opposite directions each quarter during the last half of 1951 and all of 1952.

The relative lack of correlation between the direction of the movement of production and deliveries in the bakery industry was accompanied by a wide difference in degree of seasonality between production and deliveries. Deliveries fluctuated several times as much as production, except during the last 3 quarters of 1952. During that period the fluctuations in deliveries and production were of approximately the same magnitude but the movements were in opposite directions.

The fact that deliveries moved so moderately in 1952 would seem to be much more significant than the apparent lack of seasonal correlation between deliveries and production that year. The apparent shift away from extremes in sugar procurement may indicate that bakers are attempting to bring deliveries in line with seasonal needs.

It is noted that total 1952 sugar deliveries were much larger in relation to apparent production than in the previous three years. This may be due more to increased production of sweet goods, as suggested by persons interviewed, than to an error in the production data.

Conclusions

The results of the comparisons between production of processed foods and deliveries of sugar to manufacturers of these foods largely confirm the observations noted earlier by persons familiar with the industries concerned with whom this analysis was discussed. In general, seasonality of sugar purchases by industrial users coincides with seasonality of production - with certain deviations caused by war scares, or other market situations which users regard as abnormal. If the trend towards the use of liquid sugar continues, users can be expected to respond even less to sugar market factors and to carry smaller and smaller stocks. Deliveries and production will more nearly coincide.

It would appear that the buying practices of bakers are less restricted by seasonal needs and more likely to be affected by unusual market conditions than other types of processors. Confectioners, also can be expected to deviate from the normal seasonal buying pattern but the sugar accumulations of that industry are apparently more strongly motivated by seasonal requirements than the baking industry. The closest relationship in the seasonal movement of deliveries and production was evident among fruit and vegetable processors and dairy product manufacturers for the years covered. There was also a close correlation between production and deliveries in the soft drink industry although not as pronounced as in the fruit and vegetable and the dairy product industries.

Differences among industries in the degree of correlation between end product production and sugar deliveries appear to be directly related to the differences in degree of seasonability of production and the proportion liquid sugar constitutes of total sugar usage. As noted earlier, bakers use insignificant quantities of liquid sugar and there is only a slight seasonal shift in production. Contrariwise, fruit and vegetable processors, dairy product manufacturers and bottlers have wide swings in production and use substanaial quantities of liquid sugar. Confectioners, with moderate seasonal production changes and a less pronounced use of liquid sugar, showed a production-delivery relationship about midway between the two extremes from 1949 to 1952.

Comparison of Production and Estimated Crop Value and Field Worker Requirements for Domestic Sugar Producing Areas, 1948-52 Crops

Production and estimates of crop value, field worker requirements and related data for the domestic sugar producing areas for the years 1948 through 1952 are set forth in table 2 . Similar data for individual years have appeared in previous issues of Sugar Reports. Information now available made it possible to revise some of the previously published data. As is noted at the end of the table, the degree of accuracy of some of the data varies between areas, however, they are taken from the best available sources and are believed to be sufficiently reliable to permit generalized comparisons both between areas and years.

Since 1948 there has been a generally rising trend in sugar production in all domestic areas except the beet area. However, the most striking development in this regard is that experienced in Florida. Sugar production in Florida almost doubled during the period 1948 thru 1952 with an increase in harvested acreage of only 22 percent. The major factors contributing to this increased sugar production were a 22 percent increase in the yield of sugarcane per acre and a 31 percent increase in the yield of sugar from cane processed.

Yields of cane and sugar continue to be higher in Hawaii than in any other domestic cane producing area. For the benefit of those not familiar with the production cycles in the various domestic sugarcane producing areas, it is well to note that the growing season for cane in Hawaii varies from 18 to 24 months as compared to 9 to 13 months in the other domestic producing areas. Thus, on an annual basis the yields per acre in Hawaii as compared to the other areas are not as great as the data in table may imply. Except for 1949 when harvested acreage increased 9 percent, the increased production in Hawaii has been primarily a result of increased yields of sugarcane. In 1952 sugar production in Hawaii was 7 percent greater than in 1949 in spite of a slight decline in harvested acreage.

There has been some increase in the yield of sugarcane per acre in Puerto Rico but for the most part the increased production has been due to increased acreage.

The major factor affecting sugar production in Louisiana has been climate and the most serious consequences of this were felt in 1951 when production of sugar was 35 percent below that in 1950. In the beet area the favorable position of competitive crops caused sizeable reductions in acreage and production in 1951 and 1952. The effects of these factors have been so predominant in these two areas that evaluation of general trends in yields and efficiency of operations during this period requires more detailed information than area totals and averages such as those included in table 2 .

An outstanding development in these two areas is the reduction in number of farms between 1948 and 1952. United States sugar beet production in 1952 was almost 13 percent above that in 1948 and this larger crop was produced on 22 percent less farms. Louisiana sugarcane production in 1952 was approximately 8 percent above that in 1948 whereas the number of farms producing sugarcane had declined about 25 percent in the same period.

The value of the sugar crops in all areas has increased as a result of both increased production and increased value of sugar. The effects of the sliding scale in government payments is apparent in a comparison of the changes in total government payments to Florida and Puerto Rico producers. Government payments to Puerto Rican producers in 1952 were 22 percent greater than in 1948, about the same relative increase as the increase in sugar production. Government payments to Florida producers increased between 1948 and 1952 but not in proportion to the increase in sugar production--a 62 percent increase in payments with a 93 percent increase in production. The difference in the relative increases in government payments to these areas reflects the fact that the expanded production in Florida was the result of expansion of larger farm units whereas in Puerto Rico the expanded production resulted from the expansion of smaller farm units and the addition of new farms.

Although the man-days required per acre in Hawaii continue to be significantly above those in Florida and Louisiana, because of the much greater yields per acre the required man-days per ton of sugar continue to be significantly below that in any other domestic sugar producing area. The greatest decrease in labor requirements was experienced in Florida where man-days required per ton of sugar were reduced approximately 35 percent between 1948 and 1952. This reduction was made possible not only as a result of increased labor efficiency but also increased yields of sugar per acre.

Although relative increases in prevailing wages were slightly greater in some other producing areas than in Hawaii the wages in Hawaii continue to be much higher than in any other domestic producing area.

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TABLE 2

Production and Estimated Crop Value and Field Worker Requirements for Domestic Sugar Producing Areas, 1948-1952 Crops

Crop Year	Louisiana	Florida	Hawaii	Puerto Rico 1/	Beet Area 2/
			Number of Farms		
1948	5,957	25	30	13,615	31,323
1949	5,559	22	106	14,772	31,581
1950	5,028	23	149	15,661	37,328
1951	4,833	24	786	16,525	27,409
1952	4,463	25	738	18,312	24,323
			Acreage Harvested		
1948	273,941	35,233	100,042	336,285	670,225
1949	278,860	36,581	103,794	353,385	703,159
1950	272,842	37,357	109,405	367,093	923,703
1951	257,975	38,933	109,494	366,404	695,535
1952	274,395	42,842	108,089	391,763	665,400
			Production of Cane or Beets (net weight of cane or beets in short tons)		
1948	5,256,644	1,010,327	7,542,613	9,541,232	9,073,034
1949	4,983,982	1,125,722	8,045,941	10,998,035	10,468,444
1950	5,311,857	1,169,327	8,174,821	10,614,633	13,584,890
1951	4,462,854	1,259,526	8,477,201	10,501,394	10,496,942
1952	5,666,917	1,495,338	8,693,920	12,536,940	10,169,000
			Yield of Cane or Beets Per Harvested Acre (short tons)		
1948	19.19	28.68	75.39	28.37	13.54
1949	17.87	30.77	73.96	31.12	14.89
1950	19.47	31.30	74.72	28.92	14.71
1951	17.30	32.35	77.42	28.66	15.09
1952	20.65	34.90	80.43	32.00	15.28
			Production of Sugar (short tons, raw value)		
1948	397,293	79,828	835,107	1,116,232	1,312,338
1949	415,811	104,928	958,890	1,287,667	1,613,952
1950	456,246	108,267	960,961	1,298,645	2,016,827
1951	296,566	122,115	995,759	1,238,323	1,541,025
1952	450,847	154,402	1,020,450	1,572,293	1,508,000
			Yield of Sugar Per Harvested Acre (short tons, raw value)		
1948	1.45	2.27	8.35	3.32	1.96
1949	1.49	2.87	8.79	3.64	2.30
1950	1.67	2.90	8.78	3.54	2.18
1951	1.15	3.14	9.09	3.38	2.22
1952	1.64	3.60	9.44	3.50	2.27

Production and Estimated Crop Value and Field Worker Requirements for Domestic Sugar Producing Areas, 1948-1952 Crops-(Con't)

Crop Year	Louisiana	Florida	Hawaii	Puerto Rico 1/	Beet Area 2/
	Percentage of Sugar Produced From Cane or Beets Processed				
1948	7.56	7.90	11.07	11.70	14.46
1949	8.34	9.32	11.88	11.71	15.42
1950	8.59	9.26	11.76	12.23	14.85
1951	6.65	9.70	11.75	11.79	14.68
1952	7.96	10.32	11.74	10.95	14.83
	Total Crop Value 3/ (thousands of dollars)				
1948	$ 54,087	$ 10,378	$ 104,788	$ 144,957	$ 172,198
1949	56,340	13,513	121,892	170,658	216,512
1950	71,311	16,320	134,457	186,026	290,950
1951	51,387	18,398	141,752	184,515	226,192
1952	$ 66,904	$ 21,477	$ 141,034	$ 196,877	$ 218,257
	Value of Raw Sugar (thousands of dollars?				
1948	$ 44,179	$ 8,877	$ 92,864	$ 124,125	$ 145,932
1949	48,317	12,193	111,074	149,627	187,541
1950	54,111	12,840	113,970	154,019	239,196
1951	35,944	14,800	120,686	150,085	186,772
1952	$ 56,446	$ 19,331	$ 127,760	$ 171,811	$ 188,802
	Value of Molasses 3/ (thousands of dollars)				
1948	$ 3,513	$ 693	$ 4,295	$ 5,340	$ 3,059
1949	1,868	388	2,380	3,363	2,339
1950	10,344	2,509	12,016	14,475	18,010
1951	10,064	2,509	11,923	17,281	13,520
1952	$ 3,793	$ 834	$ 3,876	$ 6,138	$ 4,027
	Total Government Payments (thousands of dollars)				
1948	$ 6,395	$ 808	$ 7,629	$ 15,492	$ 23,207
1949	6,155	932	8,438	17,668	26,582
1950	6,856	971	8,471	17,532	33,744
1951	5,379	1,089	9,143	17,149	25,900
1952	$ 6,665	$ 1,312	$ 9,398	$ 18,928	$ 25,428

TABLE 2 (Con't)

Production and Estimated Crop Value and Field Worker Requirements for Domestic Sugar Producing Areas, 1948-1952 Crops-(Con't)

Crop Year	Louisiana	Florida	Hawaii	Puerto Rico 1/	Beet Area 2/
			Number of Field Workers 4/		
1948	50,000	5,000	12,100	115,000	80,000
1949	50,000	4,000	13,750	148,000	111,000
1950	50,000	4,000	12,900	150,000	125,000
1951	45,000	4,000	12,300	148,000	95,000
1952	45,000	3,500	11,000	150,000	95,000
			Man Days Per Acre 5/		
1948	18.27	15.12	31.90	58.43	9.02
1949	15.82	15.47	30.06	51.21	11.34
1950	16.10	15.11	28.97	48.57	11.05
1951	15.67	14.85	38.27	47.73	10.10
1952	16.12	15.37	28.51	49.49	10.67
			Man Days Per Ton of Cane or Beets 5/		
1948	.95	.53	.42	2.06	.67
1949	.89	.50	.41	1.65	.76
1950	.83	.48	.39	1.68	.75
1951	.91	.46	.37	1.67	.67
1952	.78	.44	.35	1.55	.70
			Man Days Per Ton of Sugar (raw value) 5/		
1948	12.60	6.66	3.82	17.60	4.60
1949	10.62	5.39	3.42	14.07	4.93
1950	9.64	5.21	3.30	13.72	5.07
1951	13.63	4.73	3.11	14.12	4.55
1952	9.83	4.27	3.02	14.14	4.70
			Weighted Average Minimum Wage Per Day of Field Workers 6/ 7/		
1948	$ 3.31	$ 4.13	$ 6.92	$ 2.44	$ 5.62
1949	3.31	4.13	6.94	2.55	5.62
1950	3.47	4.13	7.29	2.57	5.62
1951	3.54	4.30	7.79	2.71	5.62
1952	$ 3.91	$ 4.78	$ 8.47	$ 2.90	$ 6.07

TABLE 2 (Con't)

Production and Estimated Crop Value and Field Worker Requirements for Domestic Sugar Producing Areas, 1948-1952 Crops-(Con't)

Crop Year	Louisiana	Florida	Hawaii	Puerto Rico 1/	Beet Area 2/
	Weighted Average Prevailing Wage Per Day of Field Workers 7/ 8/				
1948	$ 3.73	$ 6.02	$ 7.95	$ 2.77	$ 6.78
1949	3.85	6.02	8.80	2.76	6.87
1950	4.00	6.00	9.16	2.79	6.79
1951	4.09	6.43	9.13	2.91	7.35
1952	$ 4.57	$ 6.98	$ 10.07	$ 2.99	$ 7.68

NOTE: These data were taken from the best available sources but their accuracy varies from area to area. The data are believed to be sufficiently reliable to present a generalized comparison between the areas.

1/ Data are for the 1947-48 Crop through the 1951-52 Crop except for minimum wage per day for field workers which is for the calendar years.

2/ 1952 data relating to harvested acreage, production and value for the beet area are preliminary.

3/ For comparability between areas raw sugar valued at the New York duty-paid price for the calendar year; and molasses valued at the seasons average price for Louisiana molasses:

Year	Raw Sugar (cents per pound)	Molasses (cents per gallon)
1948	5.56	9.70
1949	5.81	5.64
1950	5.93	29.23
1951	6.06	28.68
1952	6.26	8.80

4/ Estimated peak number of workers employed during crop including working farm operators.

5/ Exclusive of administration and employee services.

6/ Based on minimum time rates in wage determinations.

7/ Daily wages computed on basis of eight hours day in Hawaii and Puerto Rico and nine hours day in other areas.

8/ Based on average daily cash earnings of workers employed on time or piece work rate basis. For the beet area the rate shown includes earnings of hand workers for whom specific rates are established in wage determinations and the earnings of workers in operations for which specific rates are not established in wage determinations.

MARKET REVIEW

Stability continues to be the primary feature of the raw sugar market. During the first eight months of 1953 the range in quoted prices of raw sugar at New York was only one-half cent whereas during the comparable periods of 1952 and 1951 prices ranged nine-tenths of a cent and 1.15 cents respectively. Stability also continues to characterize the September and November futures quotations. The average duty paid price of sugar at New York for the first eight months of 1953 was 6.30 cents per pound as compared to the first eight months averages of 6.20 cents in 1952 and 6.13 cents in 1951.

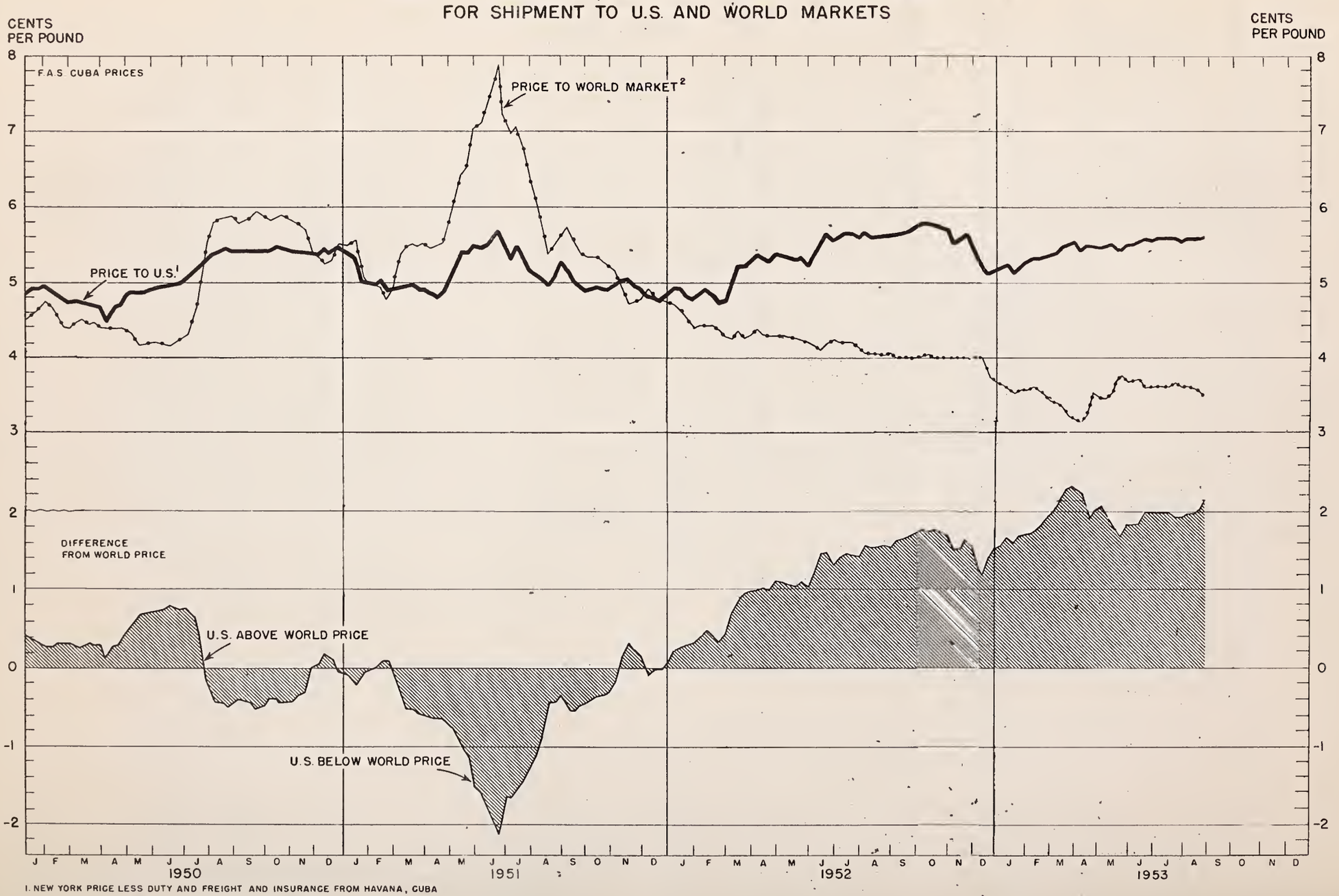
World prices have again weakened after some show of strength in May and early June, and a leveling in July and early August. On August 31, the world price f.a.s. Cuba was 3.38 cents per pound.

Distribution of refined sugar in July 1953 exceeded that in July 1952, by 113,000 tons. However, distribution in June 1953, was below that in June 1952, by 115,000 tons and the total distribution for the first seven months of 1953 slightly exceeded that in the same period of 1952. The timing of refined sugar price increases was undoubtedly a factor affecting the June-July distribution patterns. A 10 cent increase to $8.85 per hundred pounds of refined cane sugar at New York was announced on July 20, 1953, whereas a 15 cent increase to $8.30 per hundred pounds was announced on June 23, 1952. Distribution during August through the 29th of the month indicated that August 1953 distribution would be about the same as August 1952.

Quota actions taken since May 1953, were: a 100,000 ton increase in the overall quota to a total of 8,000,000 tons announced on July 22, and the proration of a beet area quota deficit of 100,000 tons announced on August 7, 1953. Revised 1953 Puerto Rican allotments based on actual production data were announced on August 20, and allotment of the 1953 mainland cane area quota was announced on August 28.

CHART 8 RAW SUGAR QUOTA PREMIUMS AND DISCOUNTS

WEEKLY COMPARISON, F.A.S. CUBA PRICES OF RAW SUGAR
FOR SHIPMENT TO U.S. AND WORLD MARKETS



1. NEW YORK PRICE LESS DUTY AND FREIGHT AND INSURANCE FROM HAVANA, CUBA
2. F.A.S. HAVANA, CUBA

TABLE 3 - Raw Sugar Quota Premiums and Discounts, Comparison of Weekly Average F.O.B. S. Cuba Prices of Raw Sugar for Shipment to U. S. and World Markets
(cents per pound)

Date	Prices to U. S. 1/	Prices to World Market 2/	Difference from World Market
1953			
Jan. 2	5.19	3.64	≠ 1.55
9	5.23	3.58	≠ 1.65
16	5.11	3.51	≠ 1.60
23	5.21	3.55	≠ 1.66
30	5.25	3.55	≠ 1.70
Feb. 6	5.31	3.60	≠ 1.71
13	5.31	3.57	≠ 1.74
20	5.33	3.49	≠ 1.84
27	5.34	3.40	≠ 1.94
Mar. 6	5.36	3.39	≠ 1.97
13	5.45	3.35	≠ 2.10
20	5.50	3.21	≠ 2.29
27	5.51	3.17	≠ 2.34
Apr. 4	5.42	3.14	≠ 2.28
11	5.46	3.23	≠ 2.23
18	5.47	3.55	≠ 1.92
25	5.44	3.43	≠ 2.01
May 1	5.48	3.42	≠ 2.06
8	5.49	3.54	≠ 1.95
15	5.45	3.67	≠ 1.78
22	5.42	3.75	≠ 1.67
29	5.49	3.67	≠ 1.82
Jun 5	5.50	3.67	≠ 1.83
12	5.53	3.70	≠ 1.83
19	5.55	3.56	≠ 1.99
26	5.54	3.56	≠ 1.98
Jul 3	5.56	3.57	≠ 1.99
10	5.57	3.58	≠ 1.99
17	5.58	3.59	≠ 1.99
24	5.58	3.66	≠ 1.92
31	5.53	3.60	≠ 1.93
Aug 7	5.56	3.60	≠ 1.96
14	5.56	3.58	≠ 1.98
21	5.58	3.52	≠ 2.06
28	5.60	3.45	≠ 2.15

1/ New York Price less duty, freight, and insurance from Havana, Cuba.
2/ F. A. S. Havana, Cuba.